The export performance of European SMEs

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Chapter 6
The Information Behavior of Exporting SMEs

Chapter 5 intended to estimate a one-year integral export performance model, including many variables and relationships. Unfortunately, only few relationships were found to be significant. One reason for this finding is the multitude of relationships estimated, and the fact that only a subpart of all relationships found in literature (Chapter 2) could be operationalized (Chapter 4). Yet, this exercise did result in establishing the importance of the collection of information for export performance. By focusing on a specific module of the integral model, so that a better insight can be gained on the effect of this component on export performance. Therefore, in this chapter, we concentrate on the information behavior displayed by European SME-managers, including the effect of this information on export performance, and the influence of the manager on the information behavior.

Information is an increasingly important input in the internationalization process. As Czinkota (2000) suggests: "Information and its management is even more important in the international setting, where entirely new parameters and environments are encountered". International expansion makes business environments more turbulent, more complex and, consequently, harder to predict. A large body of market research literature (*e.g.,* Douglas & Craig 1989) suggests that proper use of market information reduces these uncertainties in the firm's decision process, improving the firm's ability to cope with opportunities and threats on the export market, and, consequently, the firm's competitiveness. Gemünden (1991) specifically dedicates part of his review to the important role of information activity for exporters, as this is the only activity found to have a positive relationship with all three export performance measures used (export

profitability, export growth, and export intensity). This significance of 'the firm's utilization of international marketing research' is also found in Zou & Stan's (1998) review, and in our review (Chapter 2)[137]. The overall conclusion clearly is that information acquisition and use especially improves business in international business, which is more uncertain than domestic business.

The need for and acquisition of foreign market information should be considerable among (new) exporters. This is consistent with the findings of Rose & Shoham (2002), who find that "acquiring and responding to market information are particularly important in an export marketing context, where changes in the economic, political, and consumer environment are likely". They also state that "exporting generally increases the complexity and dynamism of the external environment, which increases the need for market intelligence and responsiveness". As strategic marketing literature shows, the search for information is an important part of the market orientation concept (*e.g.,* Kohli & Jaworski 1990; Narver & Slater 1990). Lately, the interest for exporters, international information behavior and market orientation has come together in the attention for an *international* concept of market orientation. Therefore, the first section elaborates on this conceptual background of international information behavior. Based on this theoretical discussion, three questions are raised. First, what does this international information behavior look like for the SMEs in our longitudinal data set (section 6.2)? Second, I investigate whether information behavior is impacted by the specific personality of the manager, in view of the pivotal role of the manager in SMEs. Third, the impact of the acquisition on export performance is explored, partly based on the findings in Chapter 2. These last two topics will be investigated both in a static and a longitudinal manner (see section 6.3).

[137] The dedication of a special issue of International Marketing Review (2002) to export information acquisition and use emphasizes the importance and growing attention for the role of information in exporting.

6.1 Role of Information in Internationalization

If we consider exporting as an innovation (*cf.* Axinn 1988), the importance of information in internationalization becomes even more obvious. For example, Julien (1998, p.40) states "[I]n other words, innovation means listening to the environment and thus requires implicit or fairly well-organized technological, competitive, and commercial scanning". In this section, the conceptual background of information as part of an international market orientation is unfolded, including the theoretical relationships between information behavior, managerial personality, and export performance.

6.1.1 International Market Orientation

In marketing literature, *market orientation* is a well-known and often researched construct (Kohli & Jaworski 1990; Narver & Slater 1990; Jaworski & Kohli 1993; Kohli, Jaworski & Kumar 1993). Kohli & Jaworski (1990) define market orientation as the generation and dissemination of information, and the subsequent use hereof in adapting the firm's offer to the needs of the customer. In a later study, they find market orientation to be positively related to 'overall performance' as seen by managers (Jaworski & Kohli 1993), comparable to the positive link of 'marketing orientation' on 'business performance' established in Narver & Slater (1990), and in Slater & Narver (2000). Therefore, it might be imperative for businesses to be market-oriented when doing business. The logical question is, whether this applies to international business as well.

Based on these general constructs of market orientation, Cadogan & Diamantopoulos (1995) offer an *export-oriented* measure of market orientation. After all, as the international performance often is evaluated separately from national performance, there is need for an international derivation of market orientation. This export-oriented market orientation consists of four components, namely export intelligence generation, dissemination, responsiveness, and a coordinating mechanism. The first component concerns all actions that lead to the establishment of export market intelligence by a firm. The other three components of the concept concern the internal sharing of intelligence (dissemination) to come to an integration and interpretation of the information on which actions are

designed and implemented (responsiveness), governed by an internal coordinating mechanism that should solve all frictions.

6.1.2 International Information Collection

Despite the interdependency of the four aspects of international market orientation, in this chapter I choose to focus on the first part of export market orientation, *i.e.* the intelligence generation, or, in other words, the information acquisition behavior of firms. As a first step in obtaining an export market orientation, this acquisition of information on customers and competitors is a key element.

To obtain this intelligence, numerous sources of information are available. Several researchers occupied themselves with the specific information used by exporting firms, categorizing them according to the type of information. Both Johanson & Vahlne (1977), and Seringhaus (1986; 1993) distinguish between objective and experiential information. Objective information embodies published (often statistical) information from primary or secondary sources, while experiential knowledge is personally acquired through direct market or customer contact. Another classification is that between formal and informal information (*e.g.,* Hart, Web & Jones 1994). More specifically, Souchon & Diamantopoulos (1996, 1999) classify the information acquisition genres into export market research (*i.e.* formal, systematic and objective information gathering), export assistance (*i.e.* governmental export promotion), and export market intelligence (*i.e.* informal information gathering, through day-to-day business). In a way, the three categorizations can be easily integrated, as formal information incorporates both export market research and export assistance, and informal information can be seen as export market intelligence.

6.1.2.1 International Information Collection in Industrial SMEs

To be market-oriented a firm needs to collect information. Yet, often there appear to be differences between large firms and SMEs in their acquisition behavior. Julien (1998, p.40) states: “Technological and commercial information is expensive, and changes quickly. It is essential to the long-term vision, and is taken into account by large firms through their research centers and other specialized departments. Small businesses are particularly vulnerable in this area because of the limited resources they are able to devote to creating, obtaining and assessing

information". The question arises, therefore, whether the size of the firm affects information acquisition behavior. If we consider firm size as a resource, and information as costly, larger firms will have more resources, and, thus, collect more (formal) information (Mohan-Neill 1995). Diamantopoulos *et al.* (1990) conclude that companies systematically using export market information are larger than nonusers. Samiee & Walters (1990) find similar results; with large companies more actively collecting export market information than smaller firms do.

More specifically, SMEs often find export market research too costly and, therefore, mainly rely on export market intelligence (Souchon & Diamantopoulos 1996). Julien (1998) confirms this, and deems that "small businesses must join or construct networks that allow them to obtain information they need at a lower cost". Belich & Dubinsky (1995) also study the extent to which small companies use internal versus external sources. Their results suggest that this choice is partly related to the management strategy, claiming that, due to the dominant position of the owner-manager in SMEs, smaller companies sometimes give priority to subjective and personal goals, resulting in a less objective use of external information sources. The results of a later study also suggest that information processing within small firms may not mirror patterns of activities in their larger counterparts (Belich & Dubinsky 1999).

Resulting, smaller firms gather less information than their larger counterparts, especially less formal information, partly due to the scarcity of resources and the personality of the owner-manager.

A minor remark on the fact that the INTERSTRATOS data set consists of *manufacturing* SMEs: it appears that industrial firms collect less intelligence than consumer companies (Avlonitis & Gounaris 1997)[138]. Therefore, the question is how much intelligence the industrial SMEs in the INTERSTRATOS data set collect.

[138] Besides, consumer firms have a higher dissemination of information, and a higher responsiveness; concluding, the behavioral component of market orientation is less developed in industrial firms versus consumer companies (Avlonitis & Gounaris 1997).

6.1.3 Information and Export Performance

As mentioned in 6.1.1, firms holding a market orientation, collecting and using information, have better firm output than firms who are less market-oriented: a market orientation leads to a better use of core capabilities and transforms these to competitive advantages, thereby boosting business performance (Slater & Narver 1994). In view of the relatively young line of research on *international* market orientation, only little empirical proof can be found for the impact of *international* market orientation on *export* performance.

Does & De Mortanges (1998) find a positive significant influence of overall market-orientation only on *subjective* measures of export performance, but not on *objective* measures. So, managers tend to believe that being market-oriented is rewarding. Cadogan, Diamantopoulos & De Mortanges (1999) relate each of the four dimensions of their international market orientation concept with export performance. For this, they use three performance measures, *i.e.* export sales revenue divided by total number of employees, a weighted performance index (assessing the performance relative to management's objectives and the firm's satisfaction with the achievement of each objective), and a global assessment of the firm's export success. All four dimensions correlate positively with the performance measures. On the other hand, Rose & Shoham (2002) conclude that export sales is neither significantly related to overall (general) market orientation, nor to any of its components. Yet, change in export sales, export profits, and change in export profits relate both significantly and positively to overall market orientation, intelligence generation, and responsiveness, but not to intelligence dissemination[139]. They adhere this result to the fact that dissemination of information is less important in SMEs due to the size of these enterprises.

More empirical results can be found on the relationship between the first component of international market orientation, *i.e.* intelligence creation through the collection of information and on export performance (see also section 2.6.3). Julien

[139] Rose & Shoham (2002) were aware of the four *international* dimensions proposed by Cadogan, Diamantopoulos & De Mortanges (1999), but for a lack of good measurement of the coordinating mechanism, they chose to apply Kohli & Jaworski's *general* framework (1990).

& Ramangalahy (2003) hypothesize for instance that "[T]he SMEs' limited capacity to acquire information and use sources is a major factor explaining their low level of involvement and performance on export markets". Therefore, there seems to be a strong relationship between collecting information and output. In this, researchers investigate either the effect of information search and the amount of information sources consulted in general, by dividing the information collected into formal/informal or into assistance/research/intelligence sources, or even by examining specific information sources.

Related to the hypothesis stated above, Julien & Ramangalahy (2003) conclude that the collected information does impact export performance positively through competitive strategy. Years earlier, Donthu & Kim (1993) already find an increase in the overall number of information sources consulted to improve export performance. On the other hand, using the same proxy, Diamantopoulos & Inglis (1988) conclude that more export intensive firms consult *fewer* information sources. According to the authors, due to a learning effect these firms obtain a higher internal capacity to cope with the complexity of exporting, diminishing the need for external information sources.

Other studies focus on the effects of specific types of information. Bijmolt & Zwart (1994) find a positive impact of export market research on export performance, prescribing the necessity of an analysis of the export country, the competitors, and the consumers. Similarly, Christensen *et al* (1987) find successful exporters to be three times as likely to enter a foreign market based on detailed market studies than non-successful ones. Dominguez & Sequeira (1993) conclude the same concerning these formal methods of information acquisition. Moini (1995) also recommends a systematic formal exploration of export market possibilities, next to informal visits to foreign markets, as do Katsikeas, Piercy & Ioannidis (1996), and Hart & Tzokas (1999). Koh (1991) even finds indirect positive results through the improvement of strategic decisions, thereby enhancing performance. A few studies find nonsignificant results for research activities (Madsen 1989; Bourantas & Halikias 1990; Koh 1991; De Luz 1993).

Another form of formal information acquisition is the use of export assistance. Yet, the results are mixed. Reid (1984) finds that governmental promotion programs

raise the likelihood of exporting to a new foreign market within the next year (which is positively related to export performance)[140], but Cafferata & Mensi (1995) conclude that SMEs experience the assistance provided by government and local agencies to be inadequate. Christensen *et al.* (1987) also conclude that the successful exporters in their sample exploited generalized market information less than ex-exporters, although they do note that such generalized data can be important bases for subsequent detailed market studies and, therefore, are not without use. "As firms gain export experience and rely less and less on public and private information sources, their information needs probably become too specific for ordinary information sources to satisfy them" (Denis & Depelteau 1985). Contrary, Cavusgil & Naor (1987) find that exporters search more information through the US Department of Commerce and through the State Agency than non-exporters. Furthermore, Bell *et al.* (1991) found 62 percent of the Irish SMEs in their sample to have obtained export sales that were directly attributable to participation in export marketing training programs. Lastly, Dominguez & Sequeira (1993) do not find any significant results for export promotion agencies.

Many studies conclude that SMEs benefit greatly from informal- or export market intelligence, including information acquired through relationships with foreign distributors and customers, and through visiting trade fairs or the export market (Reid 1984; Denis & Depelteau 1985; Cavusgil & Naor 1987; Cavusgil & Zou 1994; Styles & Amber 1994; Moini 1995). For example, Moini (1995) finds visits to foreign markets to be imperative in the development of export markets. On the other hand, Koh & Robicheaux (1988), Koh (1991), and Katsikeas, Piercy & Ioannidis (1996) all find that the frequency (or regularity) of face-to-face contacts with dealers is nonsignificant. Dominguez & Sequeira (1993) also fail to prove the significance of informal market intelligence.

Summarizing, export market research and intelligence both tend to improve the outcomes of the export planning process, while export assistance is often too

[140] With regard to the positive relationship between the number of markets an SME serves and the export performance, see Diamantopoulos & Inglis (1988), Holzmüller & Kasper (1991), Beamish *et al.* (1993), Dominguez & Sequeira (1993), Naidu & Prasad (1994).

general to be of specific use, although a cautious conclusion might be that it does enhance export performance. This is in accordance with Denis' & Depelteau's (1985) conclusion on exporting SMEs: "The study reveals the overwhelming influence on export expansion of information acquired from business transactions as opposed to reliance on private or public information services".

Based on the above, the following hypothesis is postulated:

H1: the amount of information collected by an SME has a positive effect on export performance.

6.1.4 Personality of the Manager

Various antecedents precede strategic activities, such as the personality of the manager (see Chapter 2). Yet, this is a rarely investigated concept in the studies on international market orientation. In their first conceptualization of the international market orientation, Cadogan & Diamantopoulos (1995) already criticize that most researchers look upon market orientation from a behaviorist approach, foregoing influences of unobservable phenomena such as ways of thinking. See for instance Avlonitis & Gounaris (1999), who summarize the literature on the development of market orientation, and conclude that the development of this concept is influenced "only by company-specific factors but also by market-specific ones", but do not mention any management-related factors. Based on Aaby & Slater (1989), Cadogan & Diamantopoulos (1995) plead for the inclusion of cognitions, given the importance of manager's in shaping export success. Avlonitis & Gounaris (1997) also distinguish between market orientation as both behavior ánd attitude, finding a close interrelationship between the two[141]. In 2000, Narver & Slater replicate their famous 1990-study, extending it with a measure for 'entrepreneurial orientation', next to 'market orientation' (Slater & Narver 2000). The 'entrepreneurial orientation' is build up around the innovativeness, risk taking, and competitive

[141] Although Avlonitis & Gounaris (1997, 1999) use the term 'marketing orientation' instead of 'market orientation', they conceptualise the behavioral component of 'marketing orientation' closely related to the market-orientation concept by Kohli & Jaworski (1990). The attitudinal operationalization of 'marketing orientation' is more related to the management orientation. Actually, *market orientation* encompasses much more than a mere orientation on marketing, so, to avoid confusion, I keep using the term 'market orientation'.

aggressiveness of the enterprise. Although both orientations were tested as independent regressors of business performance, there appears to be a strong positive and significant correlation between the two concepts. Therefore, there might be a link *between* the attitude of the owner-manager and the market-oriented behavior that the firm displays.

As indicated by Belich & Dubinsky (1995; 1999), information behavior in internationalizing small firms is partly determined by the decision-maker's priorities. This is in line with Churchill & Lewis (1983), who find that managers of small companies not only act for the good of the firm, but also make decisions that satisfy *personal* goals. Several other instances of the impact of managers on (international) information behavior can be found. For instance, the individual needs of the decision-maker should be used in shaping export assistance programs, rather than the needs of the organizations where these managers are employed (Gray 1997). Moreover, Walters (1996) concludes that the information acquisition activity in the firms in his survey is heavily influenced by management's commitment to exporting. This is confirmed by Cadogan *et al.* (2001), who test management's commitment with exporting as part of 'export leadership', and find that a higher commitment positively influence export market-oriented behavior.

The manager's personality influences the information behavior not only through shaping the goals and needs, but also through the way managers cope with uncertainty (see also sub-section 2.5.2). As said before, (perceived) uncertainty in international settings induces firms to collect information. For example, Wright & Ashill (1998) hypothesize that the more uncertainty management perceives (due to a highly diverse and volatile environment), the higher the information needs will be. Related to this way of thinking, Menon & Varadarajan (1992) found the volatility of the environment to influence the uncertainty as *perceived* by management and, thus, to influence the propensity to seek and use information. Lang & Calantone (1997) conclude that manager's perception of the environment influences the information seeking behavior: higher perceived threats or opportunities in the environment increase small firms information seeking. Therefore, the perception of uncertainty by managers influences the information acquisition behavior. This notion of perceived uncertainty is closely linked to the risk-taking propensity as defined by Ahmed (1985): Risk-taking propensity is

dealing with uncertainties and the degree of readiness to bear it. This risk preference is one of the most important characteristics of small business owners/entrepreneurs (*e.g.,* Lumpkin & Dess 1996). As scanning the environment can solve the uncertainty in the environment (Milliken 1987), the entrepreneur with a low risk-taking propensity (or, a high perceived uncertainty), could be expected to search for *more* information to solve this uncertainty. On the other hand, as exporting is often an innovating activity (see Axinn 1988), with all potential barriers, risk-avoiding managers could also decide *not* to search for information as they might look upon exporting as a too risky strategy. Kohli & Jaworski (1990) conceptualize senior management factors as an important antecedent of market orientation, including the 'risk aversion of top management' (negative impact), and 'top management attitude towards change' (positive). Being responsive to changing customer/client needs, can be seen as a continuous innovative behavior. Based on this model, in a later study, Jaworski & Kohli (1993) hypothesize that a risk-averse top management leads to employees generating fewer market knowledge for fear of a failure[142]. Avlonitis & Gounaris (1999) actually prove that de extent of risk-aversion negatively relates to the development of market orientation.

Therefore, if a market orientation improves performance, and risk-averseness deteriorates market orientation, a negative attitude towards risk does not pay off. Besides, the export performance literature (see also 2.5.2) shows that attitudes also have direct effects on export performance as well. Concerning the risk attitude in an international setting, this has been measured both as a general personality trait and as a specific precondition towards the risk of exporting. For example, Dichtl, Köglmayr & Müller (1990) find that a manager who is less rigid, more willing to change, or to accept product-policy risks generates higher export sales growth. Yet, other authors find non-significant direct effects on export performance from the attitude towards risk in exporting (Kaynak & Kuan 1993; Bijmolt & Zwart 1994; Moini 1995). On a general performance level, Hoskisson, Hitt & Hill (1991) find a positive relationship between risk-taking and performance. Besides, they turn the direction of the relationship between performance and managerial risk orientation

[142] In the results, the relationship between 'top management risk aversion' and 'intelligence creation' is non-significant. Yet, the risk posture of top management did affect the 'responsiveness' of the firm negatively.

around, hypothesizing that a poor performance induces managers to become less risk averse (*cf.* Cyert & March 1963)[143]. In their study on Ghanaian manufacturing companies, Pattillo & Soderbom (2000) confirm that "firms with more risk averse managers who face high risks have lower profit rate variability and lower mean profit rates". According to the authors, an explanation can be found in theory, which "predicts that the higher the risk aversion indicator, the greater should be the attempt at profit smoothing (lower variance) with attendant lower expected profits". Moreover, Naman & Slevin (1993) establish that a lack of entrepreneurial style (*i.e.* being risk-taking, proactive, and innovative) in a demanding environment worsens financial performance[144].

The following hypotheses result:

H2: SMEs with a risk-averse owner-manager collect fewer export market information.

H3: SMEs with a risk-averse owner-manager display a lower export performance.

6.2 Information Behavior INTERSTRATOS

In this section, a description of the information collection behavior of the INTERSTRATOS respondents is given for all three years. Not only the type of

[143] Although a stream of research on risk taking and general performance exists (*e.g.,* Singh 1986, Bromiley 1991), one should be careful to compare these results with the risk-taking propensity defined in this dissertation. In these studies, risk taking is often operationalized as the uncertainty of outcomes, either ex post (by measuring the ex post variability of a firm's ROI), or ex ante by asking various managers to predict the outcome of operations and taking the variability in these predictions (*e.g.*, Bromiley 1991). I use the *perception* of or *attitude* towards risk, *i.e.* risk-taking *propensity*, as discussed in the entrepreneurship literature (*e.g.,* Julien 1998), rather than the classical decision theory definition of risky choice (March & Shapira 1987; Hoskisson, Hitt & Hill 1991). It must be noticed, however, that the results on the economic approach of risk suggest that a poor performance induces higher risk taking, but that risk taking deteriorates performance (Singh 1986; March & Shapira 1987; Bromiley 1991).

[144] This is the same measure for entrepreneurial style as Slater & Narver (2000) used.

information sources (informal or formal), but also the number of information sources consulted by the respondents are described.

6.2.1 The Information Sources

Table 6-1 shows the twelve information sources in the INTERSTRATOS survey and the categories they pertain to.

Table 6-1 Information Sources in the INTERSTRATOS Survey, Categorized *cf.* Hart, Webb & Jones (1994), and Souchon & Diamantopoulos (1996).

Hart, Webb & Jones (1994)	Souchon & Diamantopoulos (1996)	INTERSTRATOS
Formal information	Export Market Research	Training institutions Business consultants Credit agencies Research institutions
	Export Market Assistance	Chambers of Commerce International organizations Public promotion fairs
Informal information	Export Market Intelligence	Suppliers Customers Export clubs National trade fairs International trade fairs[145]

The respondents have been asked, whether they consulted these information sources in the last twelve months, either at home or abroad. Table 6-2 shows the percentage of respondents who indicate that they consulted the specific source in 1991, 1993, and 1995[146]. In parentheses, the rank order of the use of the information sources is indicated. Besides, the top three sources are represented bold.

[145] The categorization of 'export clubs' and '(international) trade fairs' as *export market assistance-* or *export market intelligence* sources is open for discussion. However, taking the description of these sources into account, these are 'experiential knowledge': These sources evolve around the gaining and keeping business contacts, which can be labeled as informal knowledge (*cf.* Dominguez & Sequeira 1993).

[146] These descriptive statistics are based on the original data set, which still include missing values.

Table 6-2 Frequency with which Information Sources are Consulted at Home or Abroad, in 1991, 1993, and 1995.

	Consulted at home			Consulted abroad		
Information source	1991 (N=977)	1993 (N=721)	1995 (N=681)	1991 (N=722)	1993 (N=754)	1995 (N=515)
Training institutions	44,1 (4)	34,4 (5)	38,3 (4)	9,6 (6)	4,2 (8)	6,0 (8)
Business consultants	**61,3 (1)**	**50,1 (1)**	**54,8 (1)**	9,4 (7)	7,0 (5)	10,7 (5)
Credit agencies	**44,6 (3)**	32,7 (6)	35,5 (6)	7,6 (9)	4,2 (8)	3,9 (10)
Research institutions	14,1 (11)	11,9 (11)	13,7 (11)	3,9 (10)	3,7 (10)	5,8 (9)
Chambers of Commerce	38,9 (7)	**37,3 (3)**	**40,9 (3)**	10,7 (5)	6,5 (7)	11,3 (4)
International organizations	4,1 (12)	3,9 (12)	5,4 (12)	3,0 (12)	2,4 (12)	2,5 (12)
Public promotion fairs	23,3 (8)	16,4 (10)	16,3 (10)	3,9 (10)	3,3 (11)	3,5 (11)
Suppliers	43,6 (5)	36,1 (4)	37,9 (5)	**21,1 (3)**	**12,4 (3)**	**19,8 (3)**
Customers	39,1 (6)	32,5 (7)	33,0 (7)	**21,7 (2)**	**16,6 (2)**	**22,9 (2)**
Export clubs	19,5 (9)	19,3 (9)	17,9 (9)	8,3 (8)	6,9 (6)	8,3 (7)
National trade fairs	**52,6 (2)**	**43,1 (2)**	**43,8 (2)**	11,9 (4)	8,0 (4)	10,3 (6)
International trade fairs	17,2 (10)	19,8 (8)	21,7 (8)	**36,3 (1)**	**22,9 (1)**	**35,0 (1)**

As Table 6-2 shows, the domestic sources most often consulted over the three years are the business consultants, and the national trade fairs, closely followed by the Chambers of Commerce, the suppliers, the customers, the training institutions and the credit agencies. More than one-third of all respondents consistently indicate to use these information providers at home. Regarding the foreign sources, the first striking issue is the overall much lower usage of foreign sources. International trade fairs are an exception, being even more often visited abroad (on average 30%) than at home (on average 19%). Again, foreign suppliers and customers are consulted comparatively often by firms (around 20%), as are foreign national trade fairs, business consultants and Chambers of Commerce, although to a much lesser extent (about 10%). Thus, both at home and abroad, SMEs consult mainly trade fairs, followed by information collection at the customers and suppliers. This supports the notion that SMEs use export market intelligence relatively more often than export market research (*cf.* Leonidou & Katsikeas 1997). Still, the importance of formal research cannot be ignored, given the use of business consultants, Chambers of Commerce, training institutions and credit agencies, especially in the home market. The respondents use export assistance from public promotion fairs to a limited extent: At home (about 16%), and abroad (about 3,5%). Even worse is the use of international organizations (on average 4% at home against about 2.5% on the foreign market).

Looking at the rather consistent pattern of the use of information providers over the three years, a careful conclusion can be drawn on the (perceived) usefulness of the various sources. Considering organizations as learning entities, a supplier of information whose merits are disappointing will not be consulted in a later stage (Nonaka 1994). Therefore, the resources, which are preferred consistently over the years, might be the most useful in the eyes of the owner-manager. On the other hand, the low percentages for some sources might also indicate a low level of awareness of these sources (McAuley 1993). However, combined with the previous argumentation, if a source proofs to be valuable, word gets around and more SMEs might consult the provider two years later.

6.2.2 The Number of Information Sources

In addition to the specific information sources, and the extent to which the respondents have consulted these suppliers, the total amount of information used is examined. As explained in sub-section 6.1.3, the extent of information collection bares a close relation with export performance.

In this study, I define the quantity of domestic (foreign) information gathered as the total number of domestic (foreign) information sources that the company consulted in the last year. Both variables range from zero (no information source consulted at all) to twelve (all information sources consulted). Besides, these numbers are investigated for export market research, export market assistance, versus export intelligence sources, as well as for formal versus informal information. Table 6-3 shows the average number of information providers referred to over the three years (number of domestic sources outside, number of foreign sources in parentheses).

Table 6-3 Number of Domestic (Foreign) Information Sources Consulted.

1991			1993			1995		
EMR 1.64 (.30)	Formal 2.30 (.48)	Total 4.02 (1.47)	EMR 1.29 (.19)	Formal 1.87 (.31)	Total 3.37 (.98)	EMR 1.42 (.26)	Formal 2.05 (.44)	Total 3.59 (1.40)
EMA .66 (.18)			EMA .58 (.12)			EMA .63 (.17)		
EMI 1.72 (.99)	Informal 1.72 (.99)		EMI 1.51 (.67)	Informal 1.51 (.67)		EMI 1.54 (.96)	Informal 1.54 (.96)	

EMR = export market research, EMA = export market assistance, EMI = export market intelligence.

Out of a possible twelve providers that the respondents could consult at home or abroad, on average only four *domestic* providers are used, versus just over one *foreign* provider on average. On the domestic market, mostly formal sources are being referred to, while on the foreign market informal sources are more popular. The percentage of SMEs that indicate not to have used any information supplier at all is distressingly high, *i.e.* 13.7%, 24.7, and 20.6% for 1991, 1993, and 1995 on the domestic market, versus 44.9%, 65.0%, and 49.9% on the foreign market. Should I find evidence for a positive link between the collection of information and export performance, there is ample room for improvement in the acquisition behavior of our respondents.

6.3 Managerial Personality, Information Behavior, and Export Performance

In this section, the estimations of both the static and longitudinal information behavior model are displayed. Analogous to the procedure in the previous chapter, first, the reflective attitudinal models are validated using confirmatory factor analysis. Second, the conceptual (structural) static and longitudinal model are estimated for all three imputed data sets. As explained before, these models are estimated separately for both export sales and export ratio.

6.3.1 Methodology

In this chapter, the panel dataset 1991-1993-1995 is used (sample size is 1122), to be able to measure both the static and the longitudinal effects of information and

attitude on export performance. The original dataset is imputed multiply using NORM (see also chapter 4)[147]. As with the integral model (see Chapter 5), I use structural equations modeling to estimate the direct and indirect effects between the constructs and variables as hypothesized in section 6.1. More specifically, I again apply a two-step MIMIC approach in LISREL after fixing the measurement models (see section 5.3).

Similar to the one-year integral export performance model in Chapter 5, the first imputed data set is used to estimate the measurement models and the structural model. Next, the measurement and structural model structures are imposed upon the other two imputed data sets. The results of these two imputed data sets are represented in Appendix 4 (imputed panel data set 2) and Appendix 5 (imputed panel data set 3). These are used to examine whether the solution given by the first imputed data set is robust: Are the parameters (sign and significance) stable over the three data sets, or are the imputed values surrounded with a high extent of uncertainty (due to a high percentage of imputed missing values) causing the three models to deviate from each other?

6.3.2 Measurement of Reflective Models

Table 6-4 shows the validation of the reflective models measuring the two risk constructs. All model fit measures agree with the norms set (χ^2 = non-significant, GFI ≥ 0.90, CFI ≥ 0.90, RMSEA < 0.05). Although not all alpha's, CR, and VEE meet the criteria, all concepts are included, considering the rather exploratory set up of the survey, and the wish to build a longitudinal model with consistent concepts over the years. Convergent validity is proven by all lambda's being significantly related to the various concepts, and most of the standardized lambdas being higher or close to 0.7. Concerning discriminant validity, of course there is a considerable correlation between the same concepts over the years. It is common

[147] As explained in Chapter 4, due to the insufficient computer capacity, first only the 1995 data set could be computed, which is used in Chapter 5. For the present chapter, a higher capacity computer was available, and all three years could be imputed simultaneously. Therefore, the 1995 estimates of the CFA's can deviate somewhat from those in Chapter 5, as these are build upon the one-year imputed data, which did not take into consideration the longitudinal co-variances between the variables. Yet, the differences are only marginal.

knowledge that attitudes only change slowly. Yet, between the two different risk measures, no correlations over .5 can be found. Furthermore, the condition indices, variance inflation factors, and tolerance values all indicate no multicollinearity.

The results for the other two imputed data sets are displayed in Appendices 4 and 5. These results are very similar to the results displayed in Table 6-4. That is, all CFAs show good fit and the reliabilities of both the set of measurement items and the latent constructs are alike to the once in the first set. Besides, the lambdas found in the second and third imputed set only deviate marginally from the once in the first set (*i.e*, only .01 or .02). Therefore, the solution for the reflective attitude models is stable over the three imputed data sets.

Table 6-4 Measurement of the Reflective Attitude Models 1991, 1993 & 1995.

	Reliability Set of Measurement Items	**Reliability Latent Construct**	**Measurement Model Goodness-of-Fit Statistics (N = 1122)**
CFA Attitude 1991			χ^2 = .21 (p = 0.65, df = 1)[148] GFI = 1.00 CFI = 1.00 RMSEA = .00 (p = 0.90)
Risk towards changes (2 items, Risk1)	α = 0.63	CR = 0.63 *VEE = 0.46* λ_{av} = *0.68* λ_{low} = *0.67*	
Risk towards planning (2 items, Risk2)	α = 0.57	CR = 0.60 *VEE = 0.43* λ_{av} = 0.72 λ_{low} = *0.57*	
CFA Attitude 1993			χ^2 = 1.87 (p = 0.17, df = 1) GFI = 1.00 CFI = 1.00 RMSEA = .04 (p = 0.52)
Risk towards changes (2 items, Risk1)	α = 0.57	*CR = 0.58* *VEE = 0.41* λ_{av} = *0.64* λ_{low} = *0.56*	
Risk towards planning (2 items, Risk2)	α = 0.54	*CR = 0.58* *VEE = 0.43* λ_{av} = *0.58*	

[148] Because of the size of the longitudinal dataset, the program was not able to estimate an asymptotic covariance matrix, so the normal χ^2 is used.

	Reliability Set of Measurement Items	Reliability Latent Construct	Measurement Model Goodness-of-Fit Statistics (N = 1122)
		λ_{low} = 0.46	
CFA Attitude 1995			χ^2 = 2.63 (p = 0.11, df = 2) GFI = 1.00 CFI = 1.00 RMSEA = .00 (p = 0.84)
Risk towards changes (2 items, Risk1)	α = 0.66	CR = 0.68 VEE = 0.50 λ_{av} = 0.71 *λ_{low} = 0.64*	
Risk towards planning (2 items, Risk2)	α = 0.54	*CR = 0.57* *VEE = 0.41* *λ_{av} = 0.63* *λ_{low} = 0.48*	

Italic criteria are below the cut-off point.

6.3.3 Measurement Formative Variables

In operationalizing the formative information composites, a simple count of the number of times a respondent indicates to have used an information source suffices. This approach somewhat relates to existing scales by measuring the amount of information collected or the breadth of search (*cf.* Marandu 1995; Nijssen & Douglas 1999; Yeoh 2000). In this, the index encompasses part of the statements used to measure the dimension Intelligence Creation in MARKOR[149], such as "We collect industry information by informal means" (Kohli, Jaworski & Kumar 1993).

[149] The INTERSTRATOS information sources encompass much of the content in statements 1, 2, 3, 5, 6, 7, and 10 in the scale for Intelligence Creation, *i.e.* "In this business unit, we meet with customers at least once a year to find out what products or services they will need in the future", "Individuals from our manufacturing department interact directly with customers to learn how to serve them better", "In this business unit, we do a lot of in-home market research", "We poll end users at least once a year to assess the quality of our products and services", "We often talk with or survey those who can influence our end users' purchases (*e.g.*, retailers, distributors)", "We collect industry information by informal means *e.g.*, lunch with industry friends, talks with trade partners)", and "We periodically review the likely effect of changes in our business environment (*e.g.*, regulation) on customers", respectively.

This can be done on three levels: (1) Total information at home and abroad, (2) total amount of formal and informal information at home and abroad, and (3) the total amount of export assistance, research, and intelligence information at home and abroad. The first distinction is too broad, and leaves us with no possibilities to say anything about the relative importance of various types of information. The second categorization is used in Chapter 5, and is, to preserve consistency, applied in this chapter as well. Next, the third, most specific categorization gives even more information on the type of information. As one goal of this chapter is to zoom in on information behavior, I also estimate the models with this categorization. Export sales and export ratio will be measured as such. Table 6-5 shows the various formative variables used.

Table 6-5 Formative Variables in the Model.

Variables	Measurement
Total number of informal information sources used at home	Sum of 7 possible sources
Total number of formal information sources at home	Sum of 5 possible sources
Total number of informal information sources used abroad	Sum of 7 possible sources
Total number of formal information sources abroad	Sum of 5 possible sources
Total number of export research sources at home	Sum of 4 possible sources
Total number of export assistance sources at home	Sum of 3 possible sources
Total number of export intelligence sources at home	Sum of 5 possible sources
Total number of export research sources abroad	Sum of 4 possible sources
Total number of export assistance sources abroad	Sum of 3 possible sources
Total number of export intelligence sources abroad	Sum of 5 sources
Export sales	Ratio scale
Export ratio	Ratio scale

6.3.4 The Static Model

Figure 6.1 portrays the static model, with information behavior either consisting of four or six separate variables and the risk avoiding propensity consisting of two components. The hypothesized effects are portrayed as well. Export performance is either export ratio or export sales.

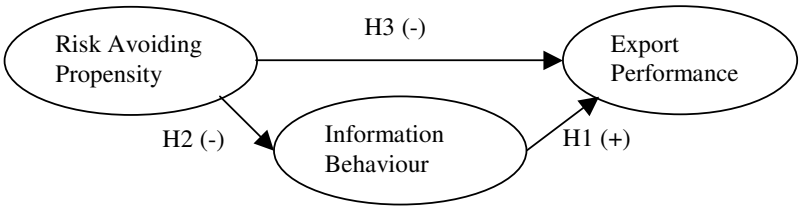

Figure 6-1 The Static Information Model.

This general model is the premise for the models to be estimated. Fixing the lambdas of the reflective attitudinal variables, four one-year models are been estimated[150] (see results in Table 6-6, and Table 6-7):

(1) Export performance measured with export ratio, information categorized as formal and informal information;
(2) Export performance measured with export sales, information categorized as formal and informal information;
(3) Export performance measured with export ratio, information categorized as export market research, assistance, and intelligence information;
(4) Export performance measured with export ratio, information categorized as export market research, assistance, and intelligence information;

Both tables show the goodness-of-fit of the four models, the standardized loadings and the t-values (in parentheses).

Appendix 4 and 5 display the results of the structural model for the other two imputed data sets. Both the consistencies and the deviations over the data sets are discussed in the results section, either to strengthen the proof for a hypothesis (if proof is found consistently in all three data sets) or to refine the proof found in data set one.

[150] The modification indices clearly indicate that the information variables have correlated errors. As these co-variances can be explained theoretically, these modifications are accepted and included.

Table 6-6 Results Static Model; Categories Formal – Informal Information.

	Model 1 (export ratio)	**Model 2 (export sales)**
Goodness-of-fit statistics		
	χ^2 = 22.00 (.18, df = 17) RMSEA = .017 (1.00) GFI = 1.00 CFI = 1.00	χ^2 = 30.43 (.023, df = 17) RMSEA = .026 (1.00) GFI = .99 CFI = .99
Size and significance of effects		
On 'collecting informal information at home' from		
Risk towards changes	**-.15 (-2.54)**	**-.15 (-2.54)**
Risk towards planning	.09 (1.47)	.09 (1.47)
On 'collecting formal information at home' from		
Risk towards changes	**-.16 (-2.68)**	**-.16 (-2.68)**
Risk towards planning	**.13 (2.07)**	**.13 (2.07)**
On 'collecting informal information abroad' from		
Risk towards changes	**-.17 (-2.96)**	**-.17 (-2.96)**
Risk towards planning	-.06 (-1.03)	-.06 (-1.03)
On 'collecting formal information abroad'		
Risk towards changes	**-.12 (-2.01)**	**-.12 (-2.01)**
Risk towards planning	-.02 (-.36)	-.02 (-.36)
On 'export performance' from		
Risk towards changes	*-.16 (-1.80)*	**-.31 (-3.62)**
Risk towards planning	-.09 (-1.33)	-.07 (-.95)
Domestic informal information	.02 (.58)	**.08 (2.83)**
Domestic formal information	-.01 (-.27)	.03 (.95)
Foreign informal information	**.21 (7.17)**	**.33 (12.01)**
Foreign formal information	**.15 (5.17)**	**.32 (11.58)**

Standardized loadings, t-values in parentheses, significant parameters at 95% bold, at 90% italic.

Table 6-7 Results Static Model; Categories Intelligence - Research – Assistance Information.

	Model 3 (export ratio)	**Model 4 (export sales)**
Goodness-of-fit statistics		
	χ^2 = 30.31 (.09, df = 21) RMSEA = .02 (1.00) GFI = 1.00 CFI = 1.00	χ^2 = 38.80 (.01, df = 21) RMSEA = .026 (1.00) GFI = .99 CFI = .99
Size and significance of effects		
On 'collecting export intelligence information at home' from		
Risk towards changes	**-.15 (-2.54)**	**-.15 (-2.54)**
Risk towards planning	.09 (1.47)	.09 (1.47)
On 'collecting export research information at home' from		
Risk towards changes	**-.16 (-2.65)**	**-.16 (-2.65)**
Risk towards planning	.09 (1.52)	.09 (1.47)
On 'collecting export assistance information at home' from		

Risk towards changes	*-.10 (-1.67)*	*-.10 (-1.67)*
Risk towards planning	**.14 (2.22)**	**.14 (2.22)**
On 'collecting export intelligence information abroad' from		
Risk towards changes	**-.17 (-2.96)**	**-.17 (-2.96)**
Risk towards planning	-.06 (-1.03)	-.06 (-1.03)
On 'collecting export research information abroad' from		
Risk towards changes	-.09 (-1.59)	*-.10 (-1.59)*
Risk towards planning	-.02 (-.30)	-.02 (-.30)
On 'collecting export assistance information abroad'		
Risk towards changes	*-.10 (-1.67)*	*-.10 (-1.67)*
Risk towards planning	-.02 (-.29)	-.02 (-.29)
On 'export performance' from		
Risk towards changes	*-.10 (-1.69)*	**-.19 (-3.30)**
Risk towards planning	-.08 (-1.32)	-.05 (-.95)
Dom. intelligence information	.02 (.58)	**.08 (2.83)**
Dom. research information	-.02 (-.73)	.01 (.43)
Dom. assistance information	.02 (.65)	.04 (1.48)
For. intelligence information	**.21 (7.17)**	**.33 (12.01)**
For. research information	**.12 (4.11)**	**.27 (9.98)**
For. assistance information	**.12 (4.22)**	**.22 (7.98)**

Standardized loadings, t-values in parentheses, significant parameters at 95% bold, at 90% italic.

All four one-year models show a good fit, looking at the χ^2 statistic, the RMSEA, GFI and CFI[151], although models 2 and 4 (using export sales) show a too large χ^2 (in the second and third imputed data set, these statistics do show a good fit). Looking at the hypotheses, the results show the following[152]. Concerning hypothesis 1 ("The amount of information collected by an SME has a positive effect on export performance"), the results show that the *foreign* information sources indeed have a strong and significant positive impact on export performance. Besides, the strongest relationship is between the informal or intelligence information and performance. In addition, the relationships are stronger when 'export sales' is used as a dependent variable. Furthermore, both the research *and* assistance information from abroad is beneficial for performance. All these results come forward in each of the three imputed data sets, and are, therefore, considered stable. Looking at the *domestic* information used, only the informal (or intelligence) information impacts export sales, but not export ratio. In addition, the other two imputed sets show a strong positive effect from the

[151] See section 5.3.2 for an argumentation for and explanation of these fit statistics.

[152] Only the significant results are discussed.

assistance information gathered on the home market for both performance measures. Therefore, there is support for hypothesis 1, but mostly for information gathered from sources used abroad. Considering the low use of foreign information sources (see Table 6-2), there is ample room for improving export performance by increasing the collection of information form these sources.

When regarding hypothesis 2 ("SMEs with a risk-averse owner-manager collect fewer export market information"), a clear distinction can be found between the two risk variables used in this model. The first attitudinal variable touches upon the feelings of the managers towards changes and has a significant negative impact on the collection of informal (intelligence) information in all four models. Yet, the second attitudinal variable, *i.e.* how managers reflect upon planning and proven procedures, does not affect the amount of informal (intelligence) information sought. Although the broader categorized models (1 and 2) show that both risk variables impact the formal information acquired at home in all three imputed data sets, the more specifically categorized models (3 and 4) refine these results. 'Risk towards changes' influences the collection of formal information both at home *and* abroad negatively (in all three sets). 'Risk towards changes' mainly affects the *research* component of formal information negatively, at home and abroad, while the only abroad-acquired export assistance is affected negatively, especially according to the second and third data set[153]. The three data sets also give support for a positive effect of 'Risk towards planning' on the amount of export research and assistance information asked for (two out of three sets significant). The other relationships between the risk variables and information variables are non-significant. Therefore, the attitude of managers towards planning only influences one component of information collection, *i.e.* export market assistance (part of the formal information category), and positively, which is converse to the hypothesis stated. By distinguishing between two different constructs of risk attitude (as indicated by both EFA and CFA), a more specified picture emerges of the impact

[153] On a 90% level of confidence, 'Risk towards changes' does affect export assistance information negatively as well, while the relationship with export research information is just not significant on 90%, but these results are not found in the other two imputed data sets, and are, therefore, not included as stable.

of the risk attitude of the manager. Therefore, there is proof for hypothesis 2, but only for the first attitudinal component ('risk towards change').

Lastly, the third hypothesis proposes that SMEs with a risk-averse owner-manager display a lower export performance. Here, only the 'risk towards changes' has a significant, negative impact on export ratio and, especially, on export sales. Again, it is mainly the way managers think about sticking with the old ways that affects especially export sales, and, to a lesser extent, export ratio. Therefore, there is proof for hypothesis 3, but only for the attitude of owner-managers towards changes.

6.3.5 The Longitudinal Model

The basis for the longitudinal model consists of three sets of static relationships as stated in the three hypotheses above. Therefore, these hypotheses are tested within each year, leading to nine static hypotheses (three for each year). In longitudinal model specification, a common assumption is that measurement errors in the manifest variables are correlated over the years (Jöreskog & Sörbom 1999; Byrne 1998)[154]. For example, Byrne (1998, pp. 359-360) states that "[G]iven the known possibility of memory carryover effects associated with measuring instruments, such correlated error parameters would appear to be perfectly reasonable." These correlations over time are added to the model. Next, the longitudinal relationships are added to form the longitudinal model.

6.3.5.1 Longitudinal Hypotheses

In the next step, longitudinal relationships are added, and tested. Although there is just very little literature available on longitudinal relationships, most studies being cross-sectional, various hypotheses can be stated for relationships between the variables over the years. In this way, I can validate whether the inclusion of these relationships has a significantly positive effect on the fit of the model. Below, the longitudinal hypotheses are stated[155].

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[154] Jöreskog & Sörbom (1993, p. 297) admonish that "[E]very correlation between error terms must be justified and interpreted substantively."

[155] Although general strategic literature gives some evidence on the lagged associations between the risk taking and corporation performance, the inclusion of these relationships is

First of all, there exists a possibility that SMEs do no use the information collected in the same year as they collect it, leading to information having a lagged effect on performance: Information is sometimes collected to be stored for future use (Souchon & Diamantopoulos 1997).

H4: The amount of information collected has a lagged positive effect on export performance.

Next, past performance might have an impact on information behavior. For instance, Lages & Montgomery (2001) find that past performance plays a crucial role in building SMEs' commitment to exporting and to the determination of their current marketing strategy". In addition, if SMEs suffer from a resource problem, an increase in export performance might induce exporting SMEs to heighten their information collection. After all, information is costly, and if export performance improves, the SME might have more resources or be more inclined to commit resources to exporting.

H5: The export performance has a lagged positive effect on the amount of information collection.

Adding these two longitudinal relationships, four models are estimated, analogous to the one-year results, distinguishing between the two export performance measures (export ratio or export sales) and the two information categorizations

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not applicable in this context. Some authors hypothesize that taking risks has a negative lagged effect on performance. For instance, Bromiley (1991) finds that corporate risk taking appears to result in poor performance. Others state that a positive performance induces managers to be even more risk averse than before, hypothesizing a negative lagged effect (Singh 1986; Bromiley 1991; Hoskisson, Hitt & Hill 1991). Yet, the risk taking measures used in these studies do not touch upon the risk *attitude* of a manager, but use the uncertainty of the economic outcomes of the corporation. For example, Bromiley (1991) measures risk taking as the variety in security analysts' forecasts of the income of a corporation. Therefore, I do not incorporate these lagged relationships from and to risk attitude. A second reason is that I include the risk attitude in every year, and that literature shows that attitudes are not very prone to change (Eagly & Chaiken 1993).

(formal or informal information versus export market intelligence, assistance or research information):

(5) Export performance measured with export ratio, information categorized as formal and informal information;
(6) Export performance measured with export sales, information categorized as formal and informal information;
(7) Export performance measured with export ratio, information categorized as export market research, assistance, and intelligence information;
(8) Export performance measured with export sales, information categorized as export market research, assistance, and intelligence information.

6.3.5.2 Results Longitudinal Model

Table 6-8 represents the results of the models 5 through 8. First, the three static hypotheses are examined within each of the three years (associations between risk attitude, information behavior, and export performance within a year). Next, the two longitudinal hypothesis are tested, by investigating the parameters of the relationships between variables in subsequent years. For each model, the fit-statistics, size and direction of the parameters, and the t-values are displayed.

Table 6-8 Results Longitudinal Model; Categories Formal - Informal Information.

	Model 5 (export ratio)			**Model 6 (export sales)**		
Goodness-of-fit statistics						
	χ^2 = 931.97 (.00, df = 239) RMSEA = .053 (.10) GFI = .94 CFI = .92			χ^2 = 1030.75 (.00, df = 239) RMSEA = .056 (.007) GFI = .94 CFI = .92		
Size and significance of effects within one year (hypotheses 1, 2 &3)						
On 'acquisition of informal information at home' from						
	1991	**1993**	**1995**	**1991**	**1993**	**1995**
Risk towards changes	.01 (.18)	*-.10* *(-1.91)*	**-.17** **(-2.97)**	.02 (.33)	-.06 (-1.20)	*-.10* *(-1.82)*
Risk towards planning	**.14** **(2.44)**	**.25** **(4.98)**	*.10* *(1.82)*	**.14** **(2.37)**	**.23** **(4.62)**	.07 (1.25)
On 'acquisition of formal information at home' from						
Risk towards changes	-.07 (-1.21)	-.02 (-.37)	**-.20** **(-3.58)**	-.05 (-.88)	.03 (.60)	**-.14** **(-2.57)**
Risk towards planning	**.14** **(2.46)**	**.20** **(4.02)**	**.17** **(3.11)**	**.13** **(2.18)**	**.18** **(3.66)**	**.13** **(2.45)**
On 'acquisition of informal information abroad' from						
Risk towards changes	**-.20**	**-.17**	**-.17**	**-.22**	-.06	-.09

Risk towards planning	**(-3.31)** **.14** **(2.30)**	**(-3.28)** **.12** **(2.43)**	**(-3.17)** -.05 (-.86)	**(-3.53)** **.16** **(2.56)**	(-1.22) *.09* *(1.90)*	(-1.63) -.08 (-1.46)
On 'acquisition of formal information abroad'						
Risk towards changes Risk towards planning	**-.22** **(-3.67)** .03 (.46)	**-.15** **(-2.90)** .01 (.13)	**-.12** **(-2.24)** .00 (.05)	**-.22** **(-3.67)** .03 (.50)	-.04 (-.79) -.03 (-.56)	-.08 (-1.44) -.01 (-.16)
On 'export performance' from						
Risk towards changes Risk towards planning Acquisition of informal information at home Acquisition of formal information at home Acquisition of informal information abroad Acquisition of formal information abroad	-.05 (-.93) .01 (.20) *.05* *(1.80)* **.17** **(6.46)** **.13** **(4.51)** **.06** **(2.24)**	**-.10** **(-2.08)** -.01 (-.16) -.03 (1.01) **.06** **(2.52)** **.20** **(4.40)** **.19** **(3.32)**	-.07 (-1.39) **-.11** **(-2.12)** .04 (1.37) -.01 (-.25) **.13** **(5.04)** **.08** **(2.99)**	**-.32** **(-5.75)** .08 (1.49) **.06** **(2.21)** **.14** **(5.42)** **.21** **(8.09)** **.17** **(6.32)**	**-.19** **(-4.43)** -.01 (-.26) .02 (.94) .03 (1.29) **.27** **(11.28)** **.24** **(9.79)**	**-.17** **(-3.75)** *-.08* *(-1.89)* **.08** **(3.83)** .03 (1.57) **.20** **(9.58)** **.17** **(8.14)**
Size and significance of longitudinal effects (hypotheses 4 & 5)						
On 'acquisition of informal information at home' in 1993 from						
Export performance 1991	.04 (1.55)			**.08 (2.51)**		
On 'acquisition of formal information at home' in 1993 from						
Export performance 1991	**.14 (4.99)**			**.14 (4.82)**		
On 'acquisition of informal information abroad' in 1993 from						
Export performance 1991	**.18 (6.11)**			**.30 (10.17)**		
On 'acquisition of formal information abroad' in 1993 from						
Export performance 1991	**.14 (4.72)**			**.29(10.08)**		
On 'export performance' in 1993 from						
Acquisition of informal information at home in 1991 Acquisition of formal information at home in 1991 Acquisition of informal information abroad in 1991 Acquisition of formal information abroad in 1991	.01 (.24) **.06 (2.52)** **.11 (4.40)** **.08 (3.32)**			**.05 (2.28)** **.06 (2.78)** **.18 (8.32)** **.17 (7.91)**		
On 'collecting informal information at home' in 1995 from						
Export performance 1993	-.01 (-.44)			**.09 (3.12)**		
On 'collecting formal information at home' in 1995 from						
Export performance 1993	.02 (.89)			**.07 (2.35)**		
On 'collecting informal information abroad' in 1995 from						
Export performance 1993	**.19 (7.00)**			**.30 (11.29)**		
On 'collecting formal information abroad' in 1995 from						
Export performance 1993	**.19 (7.01)**			**.24 (8.57)**		
On 'export performance' in 1995 from						
Acquisition of informal information at home in 1993 Acquisition of formal information at home in 1993	.02 (.62) .03 (1.09)			.03 (1.35) **.05 (2.38)**		

Risk towards planning	.03 (.50)	.05 (1.00)	.00 (.06)	.03 (.46)	.03 (.54)	-.01 (-.12)
On 'export performance' from						
Risk towards changes	-.02 (-.40)	**-.08 (-1.68)**	-.05 (-.98)	**-.29 (-5.07)**	**-.17 (-3.83)**	**-.15 (-3.22)**
Risk towards planning	-.02 (-.29)	-.02 (-.35)	**-.12 (-2.24)**	.05 (.95)	-.02 (-.42)	**-.05 (-2.07)**
Acquisition of intelligence information at home	*.05 (1.85)*	-.03 (-1.13)	.04 (1.59)	**.06 (2.39)**	.02 (.80)	**.08 (3.99)**
Acquisition of research information at home	**.14 (4.94)**	**.08 (2.93)**	.00 (-.15)	**.11 (4.32)**	.04 (1.59)	.03 (1.62)
Acquisition of assistance information at home	**.18 (6.65)**	-.01 (-.36)	.00 (.18)	**.14 (5.21)**	.00 (-.15)	.03 (1.40)
Acquisition of intelligence information abroad	**.14 (4.80)**	**.20 (7.29)**	**.13 (5.21)**	**.23 (8.71)**	**.26 (11.23)**	**.20 (9.82)**
Acquisition of research information abroad	**.10 (2.96)**	**.18 (6.61)**	**.06 (2.46)**	**.19 (7.25)**	**.22 (9.30)**	**.15 (7.48)**
Acquisition of assistance information abroad	.04 (1.30)	**.13 (4.87)**	**.06 (2.32)**	**.11 (4.03)**	**.15 (6.37)**	**.11 (5.36)**
Size and significance of longitudinal effects (hypotheses 4 & 5)						
On 'Acquisition of intelligence information at home' in 1993 from						
Export performance 1991	.04 (1.55)			**.07 (2.48)**		
On 'Acquisition of research information at home' in 1993 from						
Export performance 1991	**.15 (5.07)**			**.13 (4.31)**		
On 'Acquisition of assistance information at home' in 1993 from						
Export performance 1991	**.09 (3.01)**			**.11 (3.59)**		
On 'Acquisition of intelligence information abroad' in 1993 from						
Export performance 1991	**.18 (6.23)**			**.30 (10.38)**		
On 'Acquisition of research information abroad' in 1993 from						
Export performance 1991	**.14 (4.89)**			**.31 (10.73)**		
On 'Acquisition of assistance information abroad' in 1993 from						
Export performance 1991	**.11 (3.60)**			**.20 (6.67)**		
On 'export performance' in 1993 from						
Acquisition intelligence information at home 1991	.01 (.41)			**.06 (2.59)**		
Acquisition research information at home 1991	**.07 (3.00)**			**.06 (2.44)**		
Acquisition assistance information at home 1991	.02 (.79)			**.05 (2.74)**		
Acquisition intelligence information abroad 1991	**.12 (4.72)**			**.19 (8.71)**		
Acquisition research information abroad 1991	**.10 (4.11)**			**.18 (4.71)**		
Acquisition assistance information abroad 1991	.03 (1.32)			**.10 (8.48)**		
On 'Acquisition of intelligence information at home' in 1995 from						
Export performance 1993	-.01 (-.41)			**.09 (3.20)**		
On 'Acquisition of research information at home' in 1995 from						
Export performance 1993	.02 (.88)			**.07 (2.63)**		
On 'Acquisition of assistance information at home' in 1995 from						
Export performance 1993	.03 (1.08)			.04 (1.48)		
On 'Acquisition of intelligence information abroad' in 1995 from						
Export performance 1993	**.19 (7.15)**			**.32 (11.48)**		
On 'Acquisition of research information abroad' in 1995 from						
Export performance 1993	**.16 (5.67)**			**.22 (7.72)**		
On 'Acquisition of assistance information abroad' in 1995 from						
Export performance 1993	**.16 (5.95)**			**.20 (6.97)**		
On 'export performance' in 1995 from						

Acquisition of informal information abroad in 1993	**.18 (6.82)**	**.24 (10.53)**
Acquisition of formal information abroad in 1993	**.18 (6.69)**	**.21 (8.93)**

Standardized loadings, t-values in parentheses, significant parameters at 95% bold, at 90% italic.

Next, the models 7 and 8 with export ratio and export sales as dependent variables , respectively, and using export market research, - assistance, and – intelligence information categories are tested (see Table 6-9).

Table 6-9 Results Longitudinal Model; Categories Intelligence - Research - Assistance Information.

	Model 7 (export ratio)			**Model 8 (export sales)**		
Goodness-of-fit statistics						
	χ^2 = 1233.29 (.00, df = 357) RMSEA = .048 (.87) GFI = .94 CFI = .91			χ^2 = 1322.13 (.00, df = 357) RMSEA = .05 (.57) GFI = .93 CFI = .92		
Size and significance of effects within one year (hypotheses 1,2 & 3)						
On 'Acquisition of intelligence information at home' from						
	1991	**1993**	**1995**	**1991**	**1993**	**1995**
Risk towards changes	.00 (.08)	*-.10* *(-1.93)*	**-.17** **(-2.93)**	.02 (.33)	-.06 (-1.23)	*-.10* *(-1.77)*
Risk towards planning	**.15** **(2.54)**	**.25** **(4.99)**	*.10* *(1.81)*	**.14** **(2.43)**	**.23** **(4.62)**	.07 (1.26)
On 'Acquisition of research information at home' from						
Risk towards changes	-.04 (-.61)	-.01 (-.24)	**-.20** **(-3.61)**	-.02 (-.26)	.03 (.61)	**-.14** **(-2.53)**
Risk towards planning	**.14** **(2.45)**	**.19** **(3.86)**	**.16** **(2.85)**	**.13** **(2.23)**	**.17** **(3.54)**	**.12** **(2.22)**
On 'Acquisition of assistance information at home' from						
Risk towards changes	**-.14** **(-2.36)**	-.04 (-.76)	**-.13** **(-2.29)**	**-.12** **(-2.05)**	.00 (.03)	*-.10* *(-1.72)*
Risk towards planning	**.16** **(2.76)**	**.17** **(3.44)**	**.16** **(3.19)**	**.15** **(2.54)**	**.15** **(3.12)**	**.16** **(2.82)**
On 'Acquisition of intelligence information abroad' from						
Risk towards changes	**-.20** **(-3.33)**	**-.17** **(-3.22)**	**-.17** **(-3.06)**	**-.21** **(-3.45)**	-.06 (-1.16)	-.07 (-1.37)
Risk towards planning	**.14** **(2.32)**	**.12** **(2.35)**	-.05 (-.94)	**.15** **(2.52)**	*.08* *(1.81)*	-.08 (-1.57)
On 'Acquisition of research information abroad'						
Risk towards changes	**-.19** **(-3.07)**	**-.11** **(-2.13)**	**-.10** **(-1.88)**	**-.18** **(-3.03)**	.01 (.14)	-.05 (-.97)
Risk towards planning	.02 (.41)	-.04 (-.74)	.01 (.10)	.03 (.44)	-.07 (-1.55)	-.01 (-.20)
On 'Acquisition of assistance information abroad'						
Risk towards changes	**-.19** **(-3.21)**	**-.14** **(-2.72)**	**-.10** **(-1.74)**	**-.18** **(-3.06)**	-.07 (-1.32)	-.06 (-1.00)

Acquisition intelligence information at home 1993	.02 (.61)	.03 (1.32)
Acquisition research information at home in 1993	.04 (1.55)	**.06 (2.60)**
Acquisition assistance information at home 1993	.00 (.04)	.03 (1.27)
Acquisition intelligence information abroad 1993	**.18 (6.75)**	**.23 (10.42)**
Acquisition of research information abroad 1993	**.15 (5.75)**	**.19 (8.34)**
Acquisition of assistance information abroad 1993	**.15 (5.76)**	**.16 (7.01)**

Standardized loadings, t-values in parentheses, significant parameters at 95% bold, at 90% italic.

When examining the four longitudinal information behavior models, the first thing to notice is that the fit of these models is lower than the one-year static models (see sub-section 6.3.4)[156]. Nevertheless, the GFI and CFI are good for all four models, and the RMSEA is around .05 for all models (and all imputed data sets). Only the χ^2 is significant and shows a bad fit. Here, we have to keep in mind the sensitivity of this statistic for large samples, as is the case here. Overall, the results are satisfactory, and will be examined for patterns, which can lead to acceptance or rejection of the hypotheses.

Considering the nine static hypotheses (compare sub-section 6.3.4), a few things stand out. First, the effect of information on export performance in the three years is examined (hypothesis 1). Again, foreign informal (intelligence) and formal (research and to a lesser extent assistance) positively affect both export ratio and export sales consistently over the three years, again emphasizing the importance of this information. Looking at the information collected on the home market, there are some significant associations, but most are non-significant. The results show that domestic informal (intelligence) information only impacts export sales, and not export ratio, and only in 1991 and 1995 (the other two imputed sets also show significant results for 1993, and in two years for export ratio, but as these only come forward in one of the three imputed data sets, these are not stable). Domestic formal information impacts export performance positively in some cases: export ratio in 1991 and 1993, and export sales in 1991. When breaking this type of information down into research and assistance it appears that the impact of export assistance information at home on export ratio is negligible in 1993, although the other two sets do show a positive significant relationship. Of course, the fact that export performance in the later two years is explained by lagged independent

[156] Although the program suggests modification indices, these have no theoretical justification, and are, therefore, not included.

variables as well, might explain this leveling out of the impact of formal information at home over the years. Again, hypothesis 1 is accepted partly.

Secondly, the results are inspected for evidence on hypothesis 2. The difference in the direction of the sign between the relationships leading from 'risk towards change' and 'risk towards planning' to the information collection still holds. That is, in general the more risk averse a manager is towards changes, the less information he/she collects, while a stronger preference for order and planning induces a manager to collect more information. For all three years, a consistently strong positive link exists between *'risk towards planning'* and the collection of informal (intelligence) information at home and abroad (with the exception of 1995, where the link between this attitudinal variable and the collection of informal information abroad is non-significant), for both model 5 and 6. For the impact on formal information, only the information collected *at home* is positively associated with the tendency towards planning. This goes for both the research and the assistance information acquired at home. Investigating the relationships between *'risk towards change'* and the information collection, there is a consistent negative association with the foreign formal (both research and assistance) and informal information (consistent over the three data sets for model 5 and 7; for model 6 and 7 only in some of the imputed data sets significant negative parameters are found). Again, the inclusion of lagged variables in 1993 and 1995 could explain this partly. At home, the significant relationships between change attitude and information are sparse and follow no specific pattern, although there is some indication for a negative association. So, hypothesis 2 is accepted only partially, and only for the risk attitude towards changes.

The last static proposition is on the assumed negative relationship between the risk avoiding propensity and export performance (hypothesis 3). The results make clear that this only accounts for the consistently negative and significant impact of 'risk towards changes' on export sales. For export ratio, the signs are negative but not significant (exception is 1993). The second and third imputed data set does show some negative associations with export ratio, but these are non-consistent over the three sets. Although 'risk towards planning' positively influences information collection, the relationship with export performance is non-significant over the

three data sets. Again, hypothesis 3 is accepted partly, but only for 'risk towards changes'.

Moving towards the longitudinal hypotheses (hypotheses 4 and 5), the following picture emerges. The information collected in 1991 does affect export performance in 1993 positively, but this is especially true for *export sales*, and for information collected *abroad* (almost twice as much as domestic information). In the other two imputed data sets, the positive impact of domestic intelligence information 1991 on export performance 1993 is even less, and sometimes non-significant. For *export ratio* in 1993, it appears that the domestic informal (intelligence) and the assistance information collected (both at home and abroad) in 1991 do not have any significant relationship with the export intensity. The linkages between information in 1993 and export performance 1995 are almost similar, although only the domestically acquired formal information in 1993 improves export sales in 1995 (and, more specifically, only the research component of formal information). Yet, the other two imputed data sets do show rather strong support for the positive impact of the domestic information collected in 1993 on export ratio in 1995 (but not export sales). Thus, hypothesis 4 is accepted as well, with the emphasis on the positive effect of foreign information for both export ratio and export sales.

Lastly, the information collected in 1993 is consistently impacted positively by the level of export performance (hypothesis 5). Yet, there are some differences when using export ratio or export sales as the export performance variable. A higher export sales in 1991 especially boosts the collection of information *abroad* in 1993 (almost twice as much than the information collected at home), while high export ratio affects the information both *at home* and *abroad* almost equally. In addition, the linkages between export sales and information collected abroad are much stronger than those with export ratio. In 1995, almost the same pattern can be found, although the impact of performance on information acquired at home is mostly non-significant. Again, export sales boosts the use of foreign information providers much more than export ratio. Although some difference can be found in the other two imputed data sets, these are rather at random, and are not taken into consideration. So, the last hypothesis is accepted as well.

6.3.6 Conclusions

Table 6-10 summarizes the proof found for the five hypotheses in the eight models, with the peculiarities found in these results.

Table 6-10 Summary Results on Hypotheses.

Hypotheses	**Models 1-4 (static)**	**Models 5-6 (longitudinal)**
H1: export information affects export performance positively	**Accepted** Especially foreign information sources, informal stronger than formal, stronger impact on export sales than export ratio	Idem
H2: risk avoiding attitude affects export information negatively	Distinction between 2 components: 1 Risk attitude towards changes: negative => Accepted 2 Risk attitude towards planning: positive => Rejected	Idem
H3: risk avoiding affects export performance negatively	Accepted partly: Only 'risk towards changes' affects performance negatively	Idem
H4: lagged information affects export performance positively	Not included	Accepted: Especially information acquired abroad and formal information acquired at home
H5: lagged performance affects export information positively	Not included	Accepted: Stronger relationships for export sales with foreign information

The results clearly show that all hypotheses at least receive partial support. Results that stand out are the deviating impact of the attitude of managers towards changes and their attitude towards the use of planning and proven procedures: The first makes owner-managers collect less information and deteriorates the export performance directly as well, while the second induces owner-managers to use more information sources, although this attitude does not impact performance directly, but only through the information collected. Secondly, the positive impact of information collected abroad is much stronger than that stemming from domestic information. Besides, informal information seems to boost performance stronger than formal information. On the other hand, the formal information has a stronger impact on the performance measure in the following year. Thirdly, although the success gained in the previous year does heighten the number of information sources collected in the subsequent year, the link is especially strong between export sales and the amount of foreign information.